Subject: MS Colloquium-9/29-Ratner-Bldg. 212/A-157
From: Nancy Sanchez <sanchez@anl.gov>
Date: Thu, 15 Sep 2005 08:27:53 -0500
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MATERIALS SCIENCE COLLOQUIUM

SPEAKER: Professor Mark Ratner
Northwestern University

TITLE: Molecular Transport Junctions: Sighting Land

DATE: Thursday, September 29, 2005

TIME: 11:00 a.m.

PLACE: Building 212, Room A157

HOST: Tao Xu

Refreshments will be served at 10:45 a.m.

Abstract: Current experimental efforts are clarifying quite beautifully the nature of charge transport in so-called molecular junctions, in which a single molecule provides the channel for current flow between two electrodes. The theoretical modeling of such structures is challenging, because of the uncertainty of geometry, the nonequilibrium nature of the process, and the variety of available mechanisms. The talk will center on the first formulation of the problem in terms of scattering theory, and then on the generalizations needed to make that simple picture relevant to the real experimental situation. These include vibronic coupling, structural disorder and energy transfer. Applications include fluctuations, transport regimes, differential negative resistance, hysteresis and IETS spectra in transport junctions.